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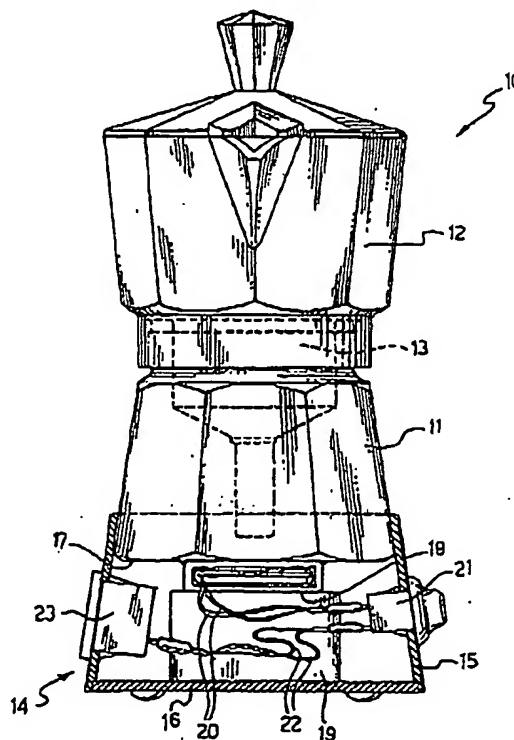
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(21) International Application Number: PCT/EP00/00892 (22) International Filing Date: 4 February 2000 (04.02.00) (30) Priority Data: M199A000230 5 February 1999 (05.02.99) IT (71) Applicant (for all designated States except US): BIALETTI INDUSTRIE S.P.A. (IT/IT); Piazza Siro Collini, 1-28887 Omegna (IT). (72) Inventor; and (75) Inventor/Applicant (for US only): RANZONI, Francesco (IT/IT); Via Sant'Angela Merici, 19, I-25032 Chiari (IT). (74) Agents: SINISCALCO, Fabio et al.; Jacobacci & Perani S.p.A., Via Sonato, 8, I-20121 Milano (IT).	(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published With international search report.	

(54) Title: ELECTRICAL COFFEE-MAKER

(57) Abstract

An electrical coffee-maker (10), comprising a lower boiler (11), an upper pot (12) and a brewing section (13) between the boiler (11) and the pot (12), is provided with a box base (14), applied to the lower part of the boiler (11), in which an electrical heating element (18) is concealed from the outside and arranged in contact with the outer surface of the bottom (17) of the boiler (11) and in which elements (20-23) for electrically connecting the element (18) to an external power supply are also arranged inside the box (14). This electrical coffee-maker is safe, reliable, efficient and can have a configuration that is similar to that of common coffee-makers.



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DESCRIPTION

"ELECTRICAL COFFEE-MAKER"

This invention relates to an electrical coffee-maker.

5 As known, normal coffee-makers comprise a lower boiler, an upper pot and a brewing section between the boiler and the pot, and require an external source of heat for operation. This source of heat is normally the flame or the electrical plate of a stove.

10 There are locations where only an electrical power supply, and no other sources of heat, is available. This is the case of offices, shops, hotel rooms, motor vehicle passenger compartments, etc. In these cases, electrical coffee-makers are required.

15 Without altering the structure, operation and appearance of a normal coffee-maker, an electrical coffee-maker, which is essentially the same as a normal coffee-maker, was proposed, which electrical coffee-maker comprises an armoured spiral electrical heating element
20 arranged inside the boiler, and connected to a socket arranged outside the boiler to connect the element to the electrical power supply.

When the boiler is filled with water, the element is submersed in the water and, once it is electrically
25 powered, the element heats the water for brewing coffee.

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This type of electrical coffee-maker presents several problems. This is because, over time, said element, being in contact with the water, oxidises and/or scales, thus decreasing its heating power. Furthermore, 5 the element armouring can deteriorate to the point of losing electrical insulation, due to corrosion by contact with the water and to wear, with the consequent risk of short-circuit or, in the worst case, risk of electrocution of the user. In addition to this, being an 10 element accessible whenever the boiler is open, the element can be accidentally touched by the user, who can be burnt if the element is still being powered by mistake or if it is very hot.

The purpose of this invention is to propose an 15 electrical coffee-maker which solves the aforesaid problems, while preserving the structure, operation and appearance of a normal coffee-maker.

This purpose is achieved by means of an electrical coffee-maker, comprising a lower boiler, an upper pot and 20 a brewing section between the boiler and the pot, characterised in that it comprises a box base applied onto the lower part of the boiler, electrical heating devices arranged in contact with the outer surface of the bottom of the boiler and housed inside the base so that 25 they are concealed from the outside, and devices for

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electrically connecting the element to an external power source also being housed in the base.

This invention will be illustrated with reference to a preferred embodiment as non-limiting example in the enclosed drawings, whereas:

Figure 1 is a raised view, partial section, of an electrical coffee-maker according to this invention;

Figure 2 is a perspective view from below, partially exploded, of the coffee-maker in figure 1.

10 The illustrated electrical coffee-maker generically referred to as 10 has a generically polyhedral shape.

Said electrical coffee-maker 10 comprises, as a normal coffee-maker, a lower boiler 11, an upper pot 12 and a brewing section 13 between the boiler 11 and pot 15 12. The brewing section 13 consists of an internal cup with perforated bottom in which the ground coffee is placed, and a perforated plate on the bottom of the pot.

A box base 14, also with a polyhedral shape to recall the geometrical pattern of the boiler 11 and the 20 pot 12, is applied underneath the boiler 11. The base 14 consists of a tubular polyhedral part 15, resulting from the set of side walls of the base 14, and of a polyhedral bottom wall 16 fastened with a screw to the tubular part 15. The boiler 11 and the base 14 are tapered upwards. 25 Thanks to the taper, the tubular part 15 is fitted on the

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boiler 11 being fitted from the top of the boiler so that it locks in the illustrated position by interference of the side walls of the tubular part with the side walls of the boiler 11.

5 A PTC type element 18 is arranged in contact with the outer surface of the bottom 17 of boiler 11. Said element consists of a hollow metallic parallelepiped body containing the specific heating element embedded in resin. In order to keep the element 18 in contact with
10 the outer surface of the bottom 17 of the boiler 11, the bottom wall 16 is provided with two parallel walls 19 that are perpendicular to the bottom and which, when the bottom wall 16 is fastened to the tubular part 15, fasten element 18 against the outer surface of the bottom 17 of
15 boiler 11 with their upper edges.

Two electrical wires 20 lead from the element 18 for connecting the element to an electrical switch 21 with light fitted on one of the side walls of the tubular part 15 of the base 14 which can be operated from the outside;
20 such electrical switch lights up when it is switched on. Two electrical wires 22 lead from the switch 21, connecting the switch to a connecting element 23 fitted on another of the side walls of the tubular part 15 of the base 14. This connecting element 23 is provided to be
25 connected to an external power wire, not illustrated. The

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switch 21, the connecting element 23 and the wires 20 and 22 are thus arranged inside the base 14, with the obvious exception of the parts of the switch and of the connecting element which need to be arranged on the
5 outside for operative purposes.

A simple warning light may be provided instead of the switch 21 with light by accordingly modifying the various electrical connections.

The operation of the electrical coffee-maker 10 is
10 described below.

The boiler 11 is filled with water to a certain level and the brewing section 13 is filled with ground coffee.

At this point, the connecting element 23 is
15 connected to an external electrical power supply and the element 18, which heats the bottom of the boiler 11, is switched on by means of switch 21 (where fitted). As well known, at a certain temperature, the existing steam pressure pushes the water upwards into the brewing
20 section 13 through a conduit that extends downwards from the cup. The ground coffee is brewed in the brewing section and the resulting brew, owing to the continual pressure existing in boiler 11, rises along an additional conduit into pot 12 and, via specific openings at the end
25 of this additional conduit, the brew pours into the pot.

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This coffee-maker 10 has the great advantage that the heating element, that is element 18, is not in contact with the water and, consequently, the problems of the known type of electrical coffee-maker described in the preamble, related to the fact that the element is submersed in the water, are overcome. Furthermore, since the element 18 is closed inside the base 14, the user cannot touch it, not even accidentally, thus preventing the risk of burns. All this is obtained without modifying the traditional shape of the coffee-maker, since, as can be understood from the figures, the base 14 is essentially an extension, from both the points of view of structure and appearance, of the boiler 11.

The solution described herein is very simple and, consequently, cost-effective to make.

The use of a PTC type element is particularly advantageous, since it is not subject to overheating; this is because the resistance value at working temperature is high enough to prevent the passage of current inside.

Since, as known, the boiler 11 must be removed and rinsed after use, provisions are required to prevent the electrical parts from coming into contact with water. For this reason, the connection between the tubular part 15 of the base 14 and the side wall of the boiler 11 and the

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connection between the bottom wall 16 and the tubular part 15 of the base 14 are watertight; such tightness can be attained by means of labyrinths between the parts or by means of seals arranged in specific housings in the base 14. Furthermore, the connecting element 23 and the switch 21 with light (or warning light) must be applied to the base 14 so to prevent the letting of water inside the base; the button of switch 21 is protected by means of a boot.

10 Naturally, different embodiments and/or additions to the description and illustrations hereof can be made.

The configuration of the coffee-maker and of its base can obviously vary according to requirements.

Other types of electrical elements can be used, although the proposal above employing a PTC type elements, as illustrated, is particularly advantageous. The element can be locked onto the external surface of the bottom of the boiler with any type of fastening element thereof formed in the housing or housed within it; alternatively, the element may be applied to said surface by means of thermal-resistant glue.

In general, any electrical heating element (e.g. a Peltier action device) can be employed.

Instead of a switch with light, the embodiment may provide a switch and a separate warning light, although

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this solution is not as simple.

This description relates to electrical coffee-makers and, in all cases, is intended to protect the electrical device for the preparation of hot beverages by brewing,
5 such as barley coffee, herbal tea and the like.

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CLAIMS

1. An electrical coffee-maker (10), comprising a lower boiler (11), an upper pot (12) and a brewing section (13) between the boiler (11) and the pot (12),
5 characterised in that it comprises a box base (14), applied to the lower part of the boiler (11), devices (18) for electrical heating arranged in contact with the outer surface of the bottom (17) of the boiler (11) and arranged in the base (14) so that they are concealed from
10 the outside, and devices (20-23) for electrically connecting the electrical heating devices (18) to an external power supply also housed in the base (14).

2. An electrical coffee-maker according to claim 1, in which said electrical heating devices consist of an
15 electrical heating element (18).

3. An electrical coffee-maker according to claim 2, in which the electrical heating element (18) is a PTC type element.

4. An electrical coffee-maker according to any of
20 the claims above, in which the base (14) comprises elements (19) for fastening the electrical heating devices (18) against the outer surface of the bottom (17) of the boiler (11).

5. An electrical coffee-maker according to claim
25 4, in which the base (14) comprises a removable bottom

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wall (16) and the fastening devices consist of walls (19) that rise from said bottom wall (16) of the base (14).

6. An electrical coffee-maker according to any of the claims above, in which said electrical connection
5 devices (20-23) are arranged in the base (14) and are watertight.

7. An electrical coffee-maker according to any of the claims above, in which the electrical connection devices comprise a connecting element (23) for connecting
10 the electrical heating devices (18) to the external power supply and an electrical switch (21) with light to enable and disable said connection and which lights up when the connection is on.

8. An electrical coffee-maker according to claim
15 7, in which a warning light is provided as an alternative to the electrical switch with light (21).

9. An electrical coffee-maker according to any of the claims above, in which the configuration of the base (14) corresponds to the configuration of the boiler (11).

20 10. An electrical coffee-maker according to claim 9, in which the base (14) comprises a removable bottom wall (16) and in which both the boiler (11) and the base (14) are tapered, the base (14) being pressure fitted onto the boiler (11) without the bottom wall (16) on the
25 boiler (11) and the bottom wall (16) being finally

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fastened onto the base (14).

11. An electrical coffee-maker according to any of the claims above, the shape of which is generically polyhedral.

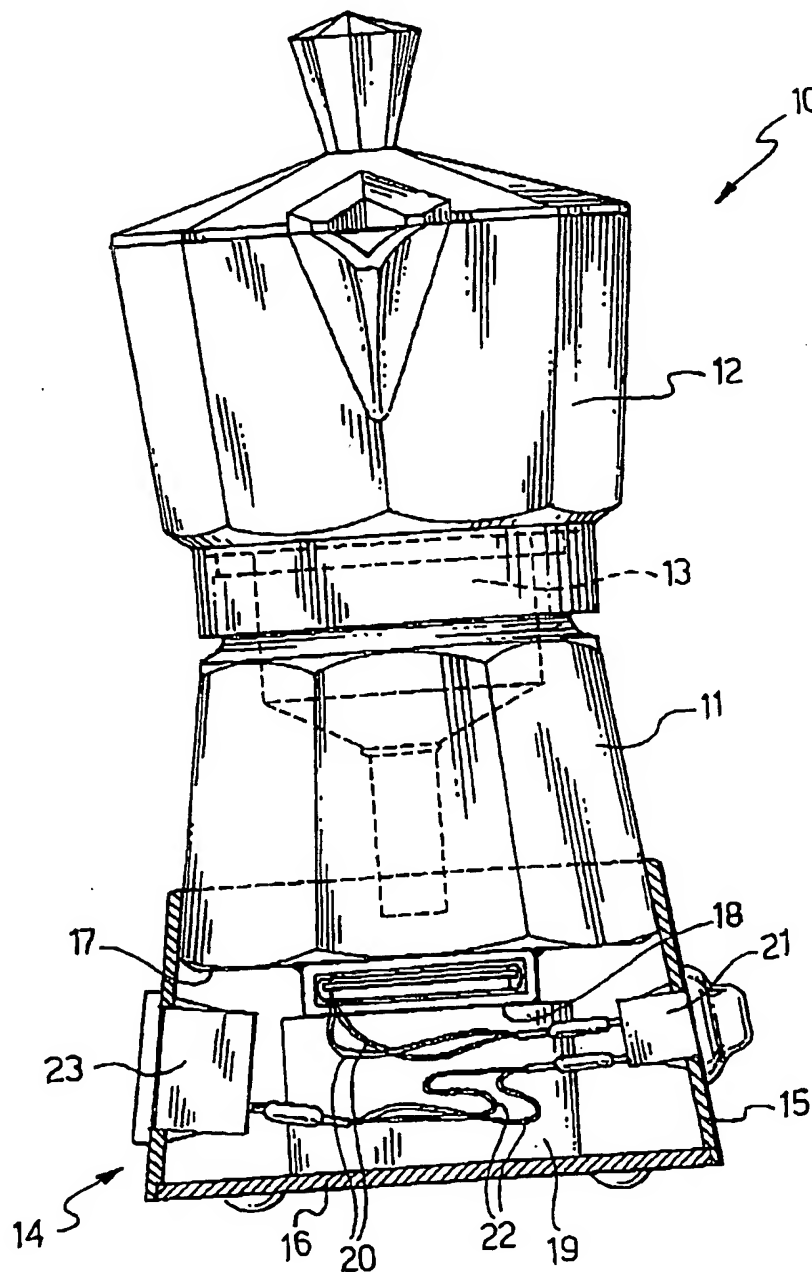


FIG.1

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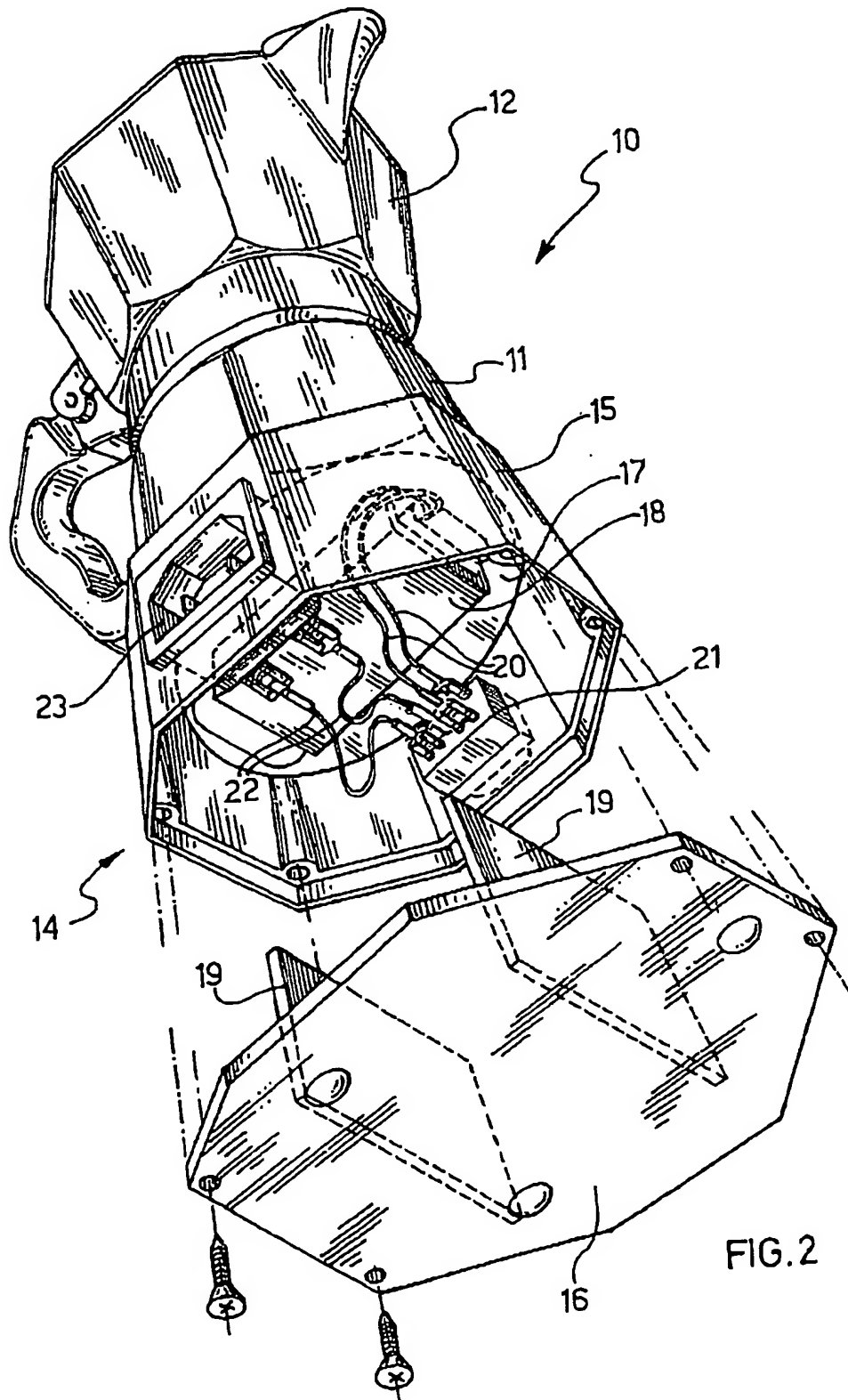


FIG. 2

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A. CLASSIFICATION OF SUBJECT MATTER IPC 7 A47J31/04 A47J31/00		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) IPC 7 A47J		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
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C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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Y	claim 1 figure 3	11
Y	DE 94 19 295 U (BREMER JOACHIM) 2 February 1995 (1995-02-02)	11
A	page 3, paragraph 3 figures 1, 2	1-3
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<div style="display: flex; justify-content: space-between;"> <div> <input checked="" type="checkbox"/> Further documents are filed in the continuation of box C. </div> <div> <input checked="" type="checkbox"/> Patent family members are listed in annex. </div> </div>		
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Int. Appl. No.
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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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